Customer No.: 31561
Docket No.: 12301-US-PA
Application No.: 10/708,850

REMARKS

Present Status of the Application

Claim 1 is objected to because of some informalities. Claim 1-10 are rejected under 35 U.S.C 103 (a) as being unpatentable over the admitted prior art Figs. 1-3 discussed in the background of the instant application in view of Kim et al (US Pat. 6,822,691, Kim hereinafter). Claims 1-6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/708,874.

In response thereto, the applicants submit an executed terminal disclaimer to overcome the double patenting rejection. The applicants respectfully amend Claim 1 to overcome the objection and also amend claim 1 by incorporating with all limitations of claim 2. After entering the amendment, Claims 1, 3-10 remain pending in the present application, and reconsideration of those claims is respectfully requested.

Discussion of the claim rejection under 35 USC 103

The Office Action rejected Claim 1 under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (AAPA) Figs. 1-3 discussed in the background of the instant application in view of Kim reference. The applicants respectfully traverse the above rejections for the reasons as set forth below.

With respect to claim 1, as amended, recites:

A method of inter-frame Y/C separation, comprising:

sampling a composite video signal for temporarily storing a plurality of sampled data $F_mP_{x,y}$, wherein the $F_mP_{x,y}$ represents data of the y pixel at the x line of the m frame, and the m, x and y are integers larger than, or equal to, 0;

measuring a plurality of luma data $Y_{x,y}$ by a $F_{m+1}P_{x,y}$, the $F_mP_{x,y}$, a $F_{m-1}P_{x,y}$ and a $F_{m-2}P_{x,y}$, wherein $Y_{x,y}$ represents luma data of the y pixel of the x line, and $Y_{x,y}=(F_{m+1}P_{x,y}+F_mP_{x,y}+F_{m-1}P_{x,y}+F_{m-2}P_{x,y})/4$; and

measuring a plurality of chroma data $C_{x,y}$ by the $F_{m+1}P_{x,y}$, the $F_mP_{x,y}$, the $F_{m-1}P_{x,y}$ and the $F_{m-2}P_{x,y}$, wherein $C_{x,y}$ represents chroma data of the y pixel of the x line.

Applicants submit that neither **AAPA**, nor **Kim** has taught, disclosed, or suggested "*measuring a plurality of luma data $Y_{x,y}$ by a $F_{m+1}P_{x,y}$, the $F_mP_{x,y}$, a $F_{m-1}P_{x,y}$ and a $F_{m-2}P_{x,y}$, wherein $Y_{x,y}$ represents luma data of the y pixel of the x line, and $Y_{x,y}=(F_{m+1}P_{x,y}+F_mP_{x,y}+F_{m-1}P_{x,y}+F_{m-2}P_{x,y})/4$*" as required by claim 1.

As admitted in the Office Action, **AAPA** fails to disclose "*measuring a plurality of luma data $Y_{x,y}$ by a $F_{m+1}P_{x,y}$, the $F_mP_{x,y}$, a $F_{m-1}P_{x,y}$ and a $F_{m-2}P_{x,y}$, of the composite video signal*" as claimed in claim 1. However, the Office Action relies on the Fig.3 of **Kim** reference to remedy the deficiency of the **AAPA** that it is known in the art to use more consecutive frames to obtain more precise motion detection. Applicants do not agree with the assertions and respectfully traverse the rejections by the following reasons.

The **Kim** reference relates to a method of detecting motion in an interlaced video sequence utilizing region by region motion information and apparatus for

motion detection. As disclosed in Summary of the Invention, it states that "....provide a motion detection method **in interlaced video**, ... which provides for a robust method of estimating a motion decision parameter which is associated with the point to point degree of motion in the interlaced video sequence." As also disclosed in Abstract, it states that "The motion detection is particularly applicable **in the conversion from interlaced video to progressive video**."

The Fig.3 of **Kim** reference, upon which the Office Action relied, discloses an interpolation operation for $x_n(i,h)$ between t=n-1 and t=n+1, as followed:

> The importance or the usefulness of estimating $m_n(i,h)$ can be easily understood from FIGS. 2 and 3. Suppose that precise motion detection information is available when we interpolate $x_n(i,h)$ and suppose there is no motion at the spatial location (i,h), then the best interpolation for $x_n(i,h)$ is to use the value of $x_{n-1}(i,h)$. This follows logically from the fact that no motion is introduced between t=n-1 and t=n+1 at the spatial location (i,h), which very strongly implies that the value of $x_n(i,h)$ would be close to the value of $x_{n-1}(i,h)$. The usage of the motion decision parameter of the present invention is also to utilize the motion information for deinterlacing to properly mix the temporal information. (Col.7, Lines 44-56, Kim)

Therefore, the **Kim** reference discloses a method of detecting motion in an interlaced video sequence, which does not teach or suggest use more consecutive four frames to obtain more precise motion detection, and also does not teach or suggest use more consecutive four frames to obtain more precise inter-frame Y/C separation of the

invention.

Furthermore, the "*measuring a plurality of luma data $Y_{x,y}$ by a $F_{m+1}P_{x,y}$, the $F_mP_{x,y}$, a $F_{m-1}P_{x,y}$ and a $F_{m-2}P_{x,y}$, wherein $Y_{x,y}$ represents luma data of the y pixel of the x line, and $Y_{x,y}=(F_{m+1}P_{x,y}+F_mP_{x,y}+F_{m-1}P_{x,y}+F_{m-2}P_{x,y})/4$*" as claimed is not the notoriously well known in the art to use more consecutive four frames to obtain more precise motion detection. When the composite video signal is decoded by the **3D comb filter**, the composite video signal is sampled by every 90 degrees of the phase angle. As in NTSC system, when the sampling phases are at 0, 0.5π, π, and 1.5π, respectively. As in PAL system, the sample phase is equal to 0.25π, 0.75π, 1.25π, and 1.75π, respectively, in which the sample phase is shifted with 45 degrees. The consecutive four frames is particularly designed by the invention for the composite video signal, and further "*measuring a plurality of luma data $Y_{x,y}$ by a $F_{m+1}P_{x,y}$, the $F_mP_{x,y}$, a $F_{m-1}P_{x,y}$ and a $F_{m-2}P_{x,y}$, wherein $Y_{x,y}$ represents luma data of the y pixel of the x line, and $Y_{x,y}=(F_{m+1}P_{x,y}+F_mP_{x,y}+F_{m-1}P_{x,y}+F_{m-2}P_{x,y})/4$*," which are not obvious to a person of ordinary skill in the art at the time the invention was made.

Independent claim 1 is allowable for at least the reason that the combination of AAPA in view of the **Kim** reference does not disclose, teach, or suggest the features that are highlighted in claim 1 above and the rejection should be withdrawn.

Because independent claim 1 is allowable over the prior art of record, its dependent claims 3-10 are allowable as a matter of law, for at least the reason that these dependent claims contain all features/elements/steps of their respective independent claim 1. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

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Discussion of the double patenting rejection

Claims 1-6 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 10/708,874. In response thereto, a terminal disclaimer signed by the undersigned is submitted to overcome the double patenting rejection.

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CONCLUSION

For at least the foregoing reasons, it is believed that the pending claims 1, 3-10 are in proper condition for allowance and an action to such effect is earnestly solicited. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted,

Date: Jan. 15, 2007

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